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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/475,390	12/30/1999	KENNETH M. HOUSTON	CSLL-588	6274

7590 07/15/2004

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EXAMINER	
LAO, LUN S	
ART UNIT	PAPER NUMBER
2643	4

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/475,390	HOUSTON, KENNETH M.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 1999*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-25 of U.S. application 09/475,390 filed on 12/30/1999 are presented for examination.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 12 –14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Arnott (US PAT. 5,128,905).

Consider claim 12, Arnott teaches a linear transducer (see fig.4,32), for use (in any event, " for use" is not a positive structural limitation) in an electro-larynx having a waveform generator that produces an input signal and a power source, said linear transducer comprising (see col.2 lines 15-22):

A. an armature assembly (see fig.4, 32), which receives said input signal and vibrates as a function thereof;

B. a suspension assembly (34,36) coupled to said armature assembly (32); and

C. a coupler disk (34,36), coupled to said suspension assembly (32), wherein a vibration (motion) in said armature assembly causes a corresponding vibration of said

coupler disk (34,36) according to a linear function of said input signal (see col.4 lines 42-55).

Consider claims 13-14, Arnott teaches a linear of the suspension assembly is a flexible planar membrane (see fig.4 and col.4 lines 42-55); and a linear transducer of the suspension assembly is a mechanical spring (see fig.4,37a and col. 4 lines 42-55;.

Consider claims 16-18 Arnott teaches an electro-larynx according of the armature assembly includes a piezo electric actuator coupled to said engagement portion, wherein an input signal delivered to said piezo-electric actuator causes a corresponding linear vibration of said engagement portion (see fig.1 and col. lines 5-40); and the armature assembly includes a magneto-resistive element (such as polymeric) coupled to said engagement portion, wherein an input signal delivered to said magneto-resistive element causes a corresponding linear vibration of said engagement portion (see fig.1 and col.2 lines 5-40) and the linear transducer has a substantially flat frequency response over a range of about 20 to 2KHz (see fig.1 and col3 line 54-col.4 line 28).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) in view of Arnott (US PAT. 5,128,905).

Consider claim 1 Burtschi teaches an electro-larynx comprising:

a waveform generator (see fig.2, 24 (pulse generating circuit)) configured (when it selected to establish a predetermined RC time constant) to selectively generate an input signal (col.2 line 39-col.3 line 63 and col.6 line 35-col.7 line 30);

a transducer (see fig.3, (37) and figs. 1-2) having a throat engagement portion, said transducer configured to receive and transform said input signal into a corresponding output vibration of said throat engagement portion, said output vibration being a substantially function of said input signal (see col.10 lines 19-46); and a power source (see fig.3, 39 and col.10 line 19-46); but Burtschi does not clearly teach a linear transducer.

However, Arnott teaches a linear transducer (see col. 2lines 15-22).

Therefore, it would obvious to one of ordinary skill in the art at time invention was make to combine the teaching of Burtschi into Arnott to provide a new and improved form of acoustic field transducer.

Consider claims 2-3 Arnott teaches an electro-larynx according to the linear transducer includes:

a. an armature assembly (see fig.4,32), which receives said input signal and vibrates as a function thereof (see col.4 lines 42-55);

b. a suspension assembly (36) coupled to said armature assembly (32); and

c. a coupler disk (34), as said engagement portion, coupled to said suspension (36) assembly, wherein a vibration in said armature (32) assembly causes a corresponding vibration (motion) of said coupler disk (34 and see col.4 line 42-55)); and an electro-larynx according of the suspension assembly (see fig.4, (36,34)) is a flexible planar membrane (see fig 4, 34,36 and col.4 lines 42-55).

Consider claim 4 Arnott an electro-larynx according of the suspension assembly is a mechanical spring (see fig.4, 37a and col.4 line 42-55).

Consider claims 6-8 Arnott teaches an electro-larynx according of the armature assembly includes a piezo electric actuator coupled to said engagement portion, wherein an input signal delivered to said piezo-electric actuator causes a corresponding linear vibration of said engagement portion (see fig.1 and col. lines 5-40); and the armature assembly includes a magneto-resistive element (such as polymeric) coupled to said engagement portion, wherein an input signal delivered to said magneto-resistive element causes a corresponding linear vibration of said engagement portion (see fig.1 and col.2 lines 5-40) and the linear transducer has a substantially flat frequency response over a range of about 20 to 2KHz (see fig.1 and col3 line 54-col.4 line 28).

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arnott (US PAT. 5,128,905) in view of Applicant's prior.

Consider claim 15 Arnott does not clearly teach the armature assembly is substantially disposed within a cylindrical motor assembly that defines an internal void

region along a central axis and having an radial magnetic field maintained within said internal void region, and wherein said armature assembly includes:

a. a bobbin coupled to said suspension assembly and disposed within said internal void region and along said central axis; and

b. a wire coil wrapped around said bobbin and within said magnetic field; whereby when said input signal is applied to said wire coil a corresponding vibration of said bobbin is experienced.

However, Applicant's prior art teaches a. a bobbin (see fig.2, 214) coupled to said suspension assembly (216) and disposed within said internal void region and along said central axis; and

b. a wire coil (212) wrapped around said bobbin and within said magnetic field; whereby when said input signal is applied to said wire coil a corresponding vibration of said bobbin (214) is experienced (see specification page 3 line 11-29).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Arnott into the teaching of applicant's prior art to provide a cylindrical motor for market demand.

7. Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parson (US PAT. 5,400,434) in view of Bronson (US PAT. 4,797,926).

Consider claims 19, Parson teaches an electro-larynx of the waveform generator includes:

a glottal sample data stored in an electronic memory (see fig.8, 85 and see col.8 line 46-col.9 line 33);

b. a pitch adjuster (91, pitch control), configured to add pitch information to said glottal sample data;

c. a mixer (95, (amplitude control)), configured to add amplitude information to said glottal sample data; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal (fig.7, 81 and see col.26-col.6 line 41); but Pearson does not teach clearly an equalization filter for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response.

However, Bronson teaches an equalization filter (see fig.2, 200 synthesizer) for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response (see col.8 line 27-col.9 line 15).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Pearson into the teaching of Bronson to provide the synthesizer reproduces speech from the transmitted information utilizing the referenced techniques for sinusoidal modeling for the voiced portion of the speech and utilizing either multipulse or noise excitation modeling for the unvoiced portion of the speech.

Consider claim 20 Pearson teaches an electro-larynx of the glottal sample data is obtained by inverse filtering and digitally sampling voice data (see fig.9, 103 and col.6 line 12-63).

Consider claim 21 Bronson teaches a waveform generator of the glottal sample data is derived from a mathematical model which preserves the harmonic qualities of the voice data (see col.5 line 50-col.6 line 64).

8. Claims 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) in view of Harbeson (US PAT. 4,401,850).

Consider claim 22 Burtschi teaches an electro-larynx comprising:

A. a waveform generator (see fig.3, 24) configured to selectively generate an input signal (by selected RC time constant see col.col.2 line 39 –col.3 line 30),

B. a transducer (see fig.3, 27) having a throat engagement portion (see figs. 1-2), said transducer configured to receive and transform said input signal into a corresponding output vibration of said throat engagement portion (see figs. 1-2 and ; and

C. a power source (see fig.3 39); but Burtschi does not teaches that a input signal has a harmonic structure corresponding to a normal glottal excitation, defined over multiple cycles.

However, Harbeson teaches an electro-larynx of the input signal generated by said waveform generator has a harmonic structure corresponding to a normal glottal excitation (see col.1 lines 39-56), defined over multiple cycles (see fig.2 and col.4 line 47-col.5 line 59).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi into the teaching of Harbeson to provide a voice sound which one produced by vibrations of the vocal cord in the larynx during an articulation..

9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeod (US PAT. 4,821,326).

Consider claim 22, MacLeod teaches an electro-larynx comprising:

A. a waveform generator (see fig.5, (50,57)) configured to selectively generate an input signal , wherein said input signal has a harmonic structure corresponding to a normal glottal excitation, defined over multiple cycles (see col.2 line 58-col.3 line 6).

B. a transducer (see fig.4a,34) having a throat engagement portion, said transducer (see fig.5,56) configured to receive and transform said input signal into a corresponding output vibration of said throat engagement portion (see col.4 lines 42-63 and col.5 line 15-61; but Macleod does not clearly teach a power source. However, it is well know at the art the apparatus or a circuit needs a power source and therefore it would have been obvious that MacLeod has a power source to connected to the circuit for working perfectly.

10. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeod (US PAT. 4,821,362) in view of Pearson (US PAT. 5,400,434) and Bronson (US PAT. 4,797,926).

Consider claim 23, MacLeod does not teach an electro-larynx of the waveform generator includes:

a. glottal sample data stored in an electronic memory;

b. a pitch adjuster, configured to add pitch information to said glottal sample data;

c. a multiplier, configured to add amplitude information to said glottal sample data;

d. an equalization filter for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal.

However, Pearson teaches a glottal sample data stored in an electronic memory (see fig.8, 85 and see col.8 line 46-col.9 line 33);

b. a pitch adjuster (91, pitch control), configured to add pitch information to said glottal sample data;

c. a multiplier (95, (amplitude control)), configured to add amplitude information to said glottal sample data; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal (fig.7, 81 and see col.26-col.6 line 41).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of MacLeod into the teaching of Pearson to provide a source signal which is capable of quickly and reliably producing voice quality that is indistinguishable from human voice.

On the other hand, Bronson teaches an equalization filter (see fig.2, 200

synthesizer) for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response (see col.8 line 27-col.9 line 15).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of MacLeod into the teaching of Bronson to provide the synthesizer reproduces speech from the transmitted information utilizing the referenced techniques for sinusoidal modeling for the voiced portion of the speech and utilizing either multipulse or noise excitation modeling for the unvoiced portion of the speech.

Consider claim 24 Pearson teaches an electro-larynx of the glottal sample data is obtained by inverse filtering and digitally sampling voice data (see fig.9, 103 and col.6 line 12-63).

Consider claim 25 Bronson teaches a waveform generator of the glottal sample data is derived from a mathematical model which preserves the harmonic qualities of the voice data (see col.5 line 50-col.6 line 64).

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) as modified by Arnott (US PAT. 5,128,905) as applied to claim 1-2 above, and further in view of Applicant's prior.

Consider claim 5 Burtschi and Arnott do not clearly teach an electro-larynx according to of the armature assembly is substantially disposed within a cylindrical motor assembly that defines an internal void region along a central axis and having an

radial magnetic field maintained within said internal void region, and wherein said armature assembly includes:

a. a bobbin coupled to said suspension assembly and disposed within said internal void region and along said central axis; and

b. a wire coil wrapped around said bobbin and within said magnetic field;

whereby when said input signal is applied to said wire coil a corresponding vibration of said bobbin is experienced.

However, Applicant's prior art teaches a. a bobbin (see fig.2, 214) coupled to said suspension assembly (216) and disposed within said internal void region and along said central axis; and

b. a wire coil (212)wrapped around said bobbin and within said magnetic field; whereby when said input signal is applied to said wire coil a corresponding vibration of said bobbin (214) is experienced (see specification page 3 line 11-29).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Arnott into the teaching of applicant's prior art to provide an electro-larynx for market demand.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) as modified by Arnott (US PAT. 5,128,905) as applied to claim 1-2 above, and further in view of Harbeson (US PAT. 4,401,850).

Consider claim 9 Burtschi and Arnott do not teach an electro-larynx of the input signal generated by said waveform generator has a harmonic structure corresponding to a normal glottal excitation, defined over multiple cycles.

However, Harbeson teaches an electro-larynx of the input signal generated by said waveform generator has a harmonic structure corresponding to a normal glottal excitation (see col.1 lines 39-56), defined over multiple cycles (see fig.2 and col.4 line 47-col.5 line 59).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Arnott into the teaching of Harbeson to provide a voice sound which one produced by vibrations of the vocal cord in the larynx during an articulation..

13. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) as modified by Arnott (US PAT. 5,128,905) as applied to claim 1 above, and further in view of Pearson (US PAT. 5,400,434) and Bronson (US PAT. 4,797,926).

Consider claim 10, Burtschi and Arnott does not teach an electro-larynx of the waveform generator includes:

a. glottal sample data stored in an electronic memory;

b. a pitch adjuster, configured to add pitch information to said glottal sample data;

c. a multiplier, configured to add amplitude information to said glottal sample data;

d. an equalization filter for generating from said glottal sample data, pitch

information, and amplitude information a base digital input signal having a predetermined frequency response; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal.

However, Pearson teaches a glottal sample data stored in an electronic memory (see fig.8, 85 and see col.8 line 46-col.9 line 33);

b. a pitch adjuster (91, pitch control), configured to add pitch information to said glottal sample data;

c. a multiplier (95, (amplitude control)), configured to add amplitude information to said glottal sample data; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal (fig.7, 81 and see col.26-col.6 line 41).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Arnott into the teaching of Pearson to provide a source signal which is capable of quickly and reliably producing voice quality that is indistinguishable from human voice.

On the other hand, Bronson teaches an equalization filter (see fig.2, 200 synthesizer) for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response (see col.8 line 27-col.9 line 15).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Arnott into the teaching of

Bronson to provide the synthesizer reproduces speech from the transmitted information utilizing the referenced techniques for sinusoidal modeling for the voiced portion of the speech and utilizing either multipulse or noise excitation modeling for the unvoiced portion of the speech.

Consider claim 11 Pearson teaches an electro-larynx of the glottal sample data is obtained by inverse filtering and digitally sampling voice data (see fig.9, 103 and col.6 line 12-63).

14. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burtschi (US PAT. 4,039,756) as modified by Harbeson (US PAT. 4,401,850) as applied to claim 1 above, and further in view of Pearson (US PAT. 5,400,434) and Bronson (US PAT. 4,797,926).

Consider claim 23, Burtschi and Harbeson do not teach an electro-larynx of the waveform generator includes:

a. glottal sample data stored in an electronic memory;

b. a pitch adjuster, configured to add pitch information to said glottal sample data;

c. a multiplier, configured to add amplitude information to said glottal sample data;

d. an equalization filter for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal.

However, Pearson teaches a glottal sample data stored in an electronic memory (see fig.8, 85 and see col.8 line 46-col.9 line 33);

b. a pitch adjuster (91, pitch control), configured to add pitch information to said glottal sample data;

c. a multiplier (95, (amplitude control)), configured to add amplitude information to said glottal sample data; and

e. a digital to analog converter, configured to transform said base digital input signal into said input signal (fig.7, 81 and see col.26-col.6 line 41).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Harbeson into the teaching of Pearson to provide a source signal which is capable of quickly and reliably producing voice quality that is indistinguishable from human voice.

On the other hand, Bronson teaches an equalization filter (see fig.2, 200 synthesizer) for generating from said glottal sample data, pitch information, and amplitude information a base digital input signal having a predetermined frequency response (see col.8 line 27-col.9 line 15).

Therefore, it would obvious to one of ordinary skill in the art at the time the invention was make to combine the teaching of Burtschi and Harbeson into the teaching of Bronson to provide the synthesizer reproduces speech from the transmitted information utilizing the referenced techniques for sinusoidal modeling for the voiced portion of the speech and utilizing either multipulse or noise excitation modeling for the unvoiced portion of the speech.

Consider claim 24 Pearson teaches an electro-larynx of the glottal sample data is obtained by inverse filtering and digitally sampling voice data (see fig.9, 103 and col.6 line 12-63).

Consider claim 25 Bronson teaches a waveform generator of the glottal sample data is derived from a mathematical model which preserves the harmonic qualities of the voice data (see col.5 line 50-col.6 line 64).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim (PCT WO 99/53867) is recited to show other related the electro-larynx.

16. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER